UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P O Box 1450
Alexandria, Virginia 22313-1450
www uspto gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/791,879	03/04/2004	Takuya Nagai	118886	2001

25944 7590 02/03/2010

OLIFF & BERRIDGE, PLC
P.O. BOX 320850
ALEXANDRIA, VA 22320-4850

EXAMINER	
KHAN, OMER S	

ART UNIT	PAPER NUMBER
2612	

NOTIFICATION DATE	DELIVERY MODE
02/03/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

OfficeAction25944@oliff.com
jarmstrong@oliff.com

Office Action Summary	Application No.	Applicant(s)	
	10/791,879	NAGAI ET AL.	
	Examiner	Art Unit	
	Omer S. Khan	2612	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 17 December 2009.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 28,31-35 and 39-42 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 28,31-35 and 39-42 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

1. This communication is in response to amendments filed on 12/17/2009.

2. In response to election restriction mailed 11/17/2009. Applicant has elected claims 28, 31-35, and 39-42, with traverse. Applicant argues the subject matter of all claims is sufficiently related that a thorough search for the subject matter of any one Group of claims would encompass a search for the subject matter of the remaining claims.

3. Applicant argument was considered; however, it was not persuasive. After a careful review of all the claims, and upon the discussion with senior examiners in the art unit; it was determined that the three groups of claims were directed toward three distinct inventions which are classified separately. Therefore, it would have been an undue burden on The Office to examine all three groups under one application. The restriction is made final.

I. Claims 1-12 and 45-47, were drawn to detect the distance between the wireless endpoint device and the interrogator, classified in class 340, subclass 825.36, 825.49, 435 and 992.

II. Claims 13, 14, 22-26, were drawn to establish communication based collision detection and communication in a noisy environment, classified in class 340, subclass 3.41.

III. Claims 28, 31-35, and 39-42, are drawn to power conservation, classified in class 340, subclass 7.32.

The inventions were distinct, each from the other because of the following reasons:

4. Inventions I, II and III were directed to related a system and method of communication of a transponder and an interrogator. The related inventions are distinct if: (1) the inventions as claimed are either not capable of use together or can have a materially different design, mode of operation, function, or effect; (2) the inventions do not overlap in scope, i.e., are mutually exclusive; and (3) the inventions as claimed are not obvious variants. See MPEP § 806.05(j). In the instant case, the inventions as claimed were distinct because detecting the distance (I) between the transponder and the interrogator **has nothing to do with** recognizing if there is garble in the communication (II) and taking appropriate measures reduce the collision; and inventions (I) and (II) **have nothing to do** with conserving power of interrogator or transponder and taking appropriate measures to conserve energy as claimed in (III). Furthermore, the inventions as claimed do not encompass overlapping subject matter and there is nothing of record to show them to be obvious variants. Applicant was not claiming three different way of solving a same problem; therefore, the three inventions are completely distinct.

5. Claims 28, 31-35, and 39-42 are currently pending in this application.

6. Applicant's arguments are moot in view of the new grounds of rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be

> patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 28, 31-33, 35 and 39-42, are rejected under 35 U.S.C. 103(a) as being unpatentable over Nysen: US 6107910, and further in view of Rodger: US 6362737 and further in view of MacLellan: US 5940006, in view of Carlson US 6963184 and further in view of Janning in US 20010040508.

Consider claim 28, Nysen discloses an endpoint device for responding to an interrogator after receiving an interrogating signal containing a main carrier by transmitting a reflected signal generated by modulating the main carrier with appropriate information, said endpoint device comprising: **(See Nysen, Abstract, col. 6 l. 43- 59, col. 31 l. 54-65, where Nysen discusses a transponder or a tag for receiving an interrogation signal and transmitting a backscatter in a main carrier to an interrogator or reader).** Nysen in view of MacLellan 5940006 discloses a frequency-utilization-ratio setting portion operable to set a distribution of a frequency utilization ratio of a subcarrier signal used to modulate said main carrier, **(See MacLellan, Fig 8, col. 12 l. 5-30, where MacLellan discusses the system is design to set the distribution frequency in ratio such as channels by selecting one of predetermine frequency channel within the entire frequency range of the subcarrier signals),** over a predetermined range of frequency of the subcarrier signal that consists of a plurality of mutually adjacent frequency channels; **(See MacLellan, col. 12 l. 50-53, where MacLellan discusses the sub carrier signal consists of a multiple adjacent frequency channels in a predetermined range).** MacLellan discloses a frequency

determining portion operable on the basis of the distribution of the frequency utilization ratio set by said frequency-utilization-ratio setting portion FURSP, **(See MacLellan, col. 12 l. 5-30, where MacLellan discusses the frequency synthesizer determines the frequency of the sub carrier signal based on the frequency set by the processor).** MacLellan discloses the FURSP to determine a frequency of said subcarrier signal by random selection within said predetermined range of frequency; **(See MacLellan, col. 11 l. 31-50, where MacLellan discusses the frequency synthesizer determines the frequency of the sub carrier signal by random selection within the defined range of frequency, i.e. freq hopping).** Rodger discloses a battery cell; and a power-source-information detecting portion operable to detect the operating state of said battery cell, the operating condition of the battery cell being at least able to power the endpoint device, **(See Rodger col. 9 l. 57-67, col. 11-55-59, and col. 41 l. 55-59, where he discusses that transceiver may include a battery).** MacLellan discloses wherein said FURSP is operable on the basis of the operating state of said battery cell detected by said power-source-information detecting portion to set the distribution of the frequency utilization ratio of the subcarrier signal, **(See MacLellan, col. 9 l. 1-26, col. 11 l. 31-50, col. 13 l. 27-45, where MacLellan discusses the frequency synthesizer sends a uplink signal when a battery has some power, i.e. the operating state of the battery cell, if the battery is dead then there is no signal from a battery driven tag).**

Nysen and the others don't exactly discusses the monitoring at least two states of the battery. In an analogous art, Janning discloses a battery-powered RF transponder

system to monitor the whereabouts of livestock. Janning discloses microprocessor 281 checks for a low battery condition and causes LED 308 to blink if battery 138 is determined to be low. This is accomplished simply by reading input port RB4 at pin 10 of microprocessor 281 and generating an intermittent output signal at output port RA2 in the event the status of port RB4 indicates that low voltage detector 307 detects a voltage of less than 2.35 volts at power supply rail 283, See Janning ¶ 137.

It would have been obvious to an ordinary skilled artisan at the time of invention to modify the invention above and include a battery monitoring indicator so the user can replace or recharge the battery before the battery completely runs out and the transponder becomes non-responsive do to the lack of power; Therefore, providing convenience to the user.

MacLellan discusses a first distribution pattern in which the individual frequency utilization ratio is relatively high in the relatively low frequency channels and a second distribution pattern in which the individual frequency utilization ratio is relatively high in the relatively high frequency channels, the first distribution pattern so that a center frequency of the distribution of the frequency utilization ratio of the subcarrier signal is lowered.

Applicant is basically claiming that individual frequency utilization ratio is relatively high in the low and high frequency channels so that a center frequency of the distribution of the frequency utilization is low, See MacLellan fig 8 , that shows frequency distribution ($f_1 + f_2$) can be considers low channel utilization and frequency distribution ($f_1 + f_3$) and frequency distribution ($f_1 + f_4$) can be consider high channel

utilization, and f_1 is the Carrier wave, i.e. a carrier frequency. MacLellan is not sending data near center frequency; therefore, a center frequency of the distribution of the frequency utilization is low, Col. 11 l. 15-30.

Carlson is being used to show a notch filter being used to eliminate the noise omega$_1$ and omerga$_2$, and the frequencies between the band is being utilized, a digital <u>notch filter for each center frequency</u> may be implemented as shown in equation (8), filtered feedback signal 78 includes a first attenuated frequency band 94 near frequency omega$_1$, and a second attenuated frequency band 96 near frequency omega$_2$, See fig 4 and 5, col. 10, l 46.

It would have been obvious to an ordinary skilled artisan at the time of invention to filter out portion of frequencies to remove the noise created by adjacent channels thus improve the quality of the signal. Applicant may also see the reference cited in the conclusion section for better understanding of prior art.

Roger teaches to use particular distribution channels, when a supply voltage of said battery cell detected by the power-source-information detecting portion is lower than a predetermined threshold value, **(See Rodger, col. 11 l. 66 – col. 13 l. 23, where Rodger discusses a use of upper bands of a subscan, higher bands carry less RF energy than the lower bands; therefore, raising the frequency will help the signal reach tags that are farther away and save power consumption).**

Consider claim 39, Nysen discloses a communication system comprising an interrogator having a transmitting portion operable to transmit an interrogating signal

containing a main carrier, and a plurality of endpoint devices each operable to receive the interrogating signal and respond to the interrogator with a reflected signal which is generated by modulating the main carrier with appropriate information, wherein an improvement comprises, **(See Nysen, Abstract, col. 6 l. 43- 59, col. 31 l. 54-65, where Nysen discusses a set of transponders or tags for receiving an interrogation signal and transmitting a backscatter in a main carrier to an interrogator or reader).** MacLellan discloses the endpoint device including an individual frequency utilization ratio setting portion operable to set a distribution of an individual frequency utilization ratio of a subcarrier signal used to modulate said main carrier, **(See MacLellan, Fig 8, col. 12 l. 5-30, where MacLellan discusses the tag is design to set the distribution frequency in ratio such as channels by selecting one of predetermine frequency channel within the entire frequency range of the subcarrier signals).** MacLellan discloses the main carrier is modulated over a predetermined range of frequency of the subcarrier signal which consists of a plurality of mutually adjacent frequency channels, **(See MacLellan, col. 12 l. 50-53, where MacLellan discusses the sub carrier signal consists of a multiple adjacent frequency channels in a predetermined range).** MacLellan discloses a frequency determining portion operable on the basis of the distribution of the individual frequency utilization ratio set by said individual frequency utilization ratio setting portion, **(See MacLellan, col. 12 l. 5-30, where MacLellan discusses the frequency synthesizer determines the frequency of the sub carrier signal based on the frequency set by the processor).** MacLellan discloses the tag is design to determine a frequency of said

subcarrier signal, by random selection within said predetermined range of frequency, **(See MacLellan, col. 11 l. 31-50, where MacLellan discusses the frequency synthesizer determines the frequency of the sub carrier signal by random selection within the defined range of frequency, i.e. freq hopping).** Nysen discloses a battery cell, **(See Nysen, col. 13 l. 38-40, where Nysen discusses tag comprises a power source or obtain energy from the RF signal where the coil becomes the power source).** Nysen discloses a power source information detecting portion operable to detect supply voltage information indicative of a supply voltage of said battery cell, **(See Nysen, col. 13 l. 38-40, col. 35 l. 59-67, where discusses the RF signal contains RF energy and signal strength translates the power information).**

Nysen discloses the said interrogator including an overall frequency utilization ratio determining portion operable to determine a distribution of an overall frequency utilization ratio of the reflected signal received from said plurality of endpoint devices, **(See Nysen, col. 38 l. 41-46, where Nysen discusses the interrogator is design to set the distribution frequency in ratio using the backscatter information).** Nysen discloses an endpoint device monitoring portion operable on the basis of said supply voltage information received from said power source information detecting portion, **(See Nysen, Fig 36-38, col. 38 l. 34-40, where Nysen discusses the interrogator is capable of monitoring a distance between the interrogator and the tag based on signal strength).** Nysen discloses the interrogator's EPDMP is capable to determines one of a plurality of predetermined supply voltage ranges in which the supply voltage of

said battery cell detected by said power source information detecting portion of said each endpoint device falls, **(See Nysen, Fig 36-38, col. 34 l. 48 col. 35 l. 38, col. 38 l. 34-40, where Nysen discusses the distance is measured based on the different levels of the signal strength).** Nysen discloses a switching information generating portion operable on the basis of the distribution of said overall frequency utilization ratio determined by said overall frequency utilization ratio determining portion, **(See Nysen, col. 38 l. 41-46, where Nysen discusses a processor for generating an interrogation signal based on distribution frequency).** Rodger discloses the processor is operable on the basis of the result of determination by said endpoint device monitoring portion, **(See Rodger, col. 11 l. 66 – col. 12 l. 16, where Rodger in view of Nysen discusses a band is determined based on the signal strength that is inversely proportional to the distance).** MacLellan discloses the interrogator is design to generate switching information on the basis of which said individual frequency utilization ratio determining portion of said each endpoint device sets the distribution of said individual frequency utilization ratio of the subcarrier signal, **(See MacLellan, Fig 9, col. 11 l. 31-50, where MacLellan discusses the tag is design to determining the frequency of a sub carrier signal within the frequency band).** MacLellan discloses the said transmitting portion of said interrogator being operable to transmit said interrogating signal containing said main carrier and said switching information generated by said switching information generating portion, **(See MacLellan, Fig 9 and 10, col. 11 l. 31-50, where MacLellan discusses the interrogator comprises a transmitter and the interrogator determines the transmission frequency of a sub**

carrier signal within the frequency band). MacLellan discloses the said individual frequency utilization ratio setting portion being operable to set the distribution of said individual frequency utilization ratio of the subcarrier signal of said each endpoint device, **(See MacLellan, col. 12 l. 5-30, where MacLellan discusses the frequency synthesizer capable of determining the individual frequency of the sub carrier signal).** on the basis of said switching information generated by said switching information generating portion and said supply voltage of said battery cell detected by said power source information detecting portion, **(See MacLellan, col. 12 l. 5-30, where MacLellan discusses the frequency synthesizer determines the frequency of the sub carrier signal based on the frequency set by the processor after the comparison of signal's strength).**

Nysen and the others don't exactly discusses the monitoring at least two states of the battery. In an analogous art, Janning discloses a battery-powered RF transponder system to monitor the whereabouts of livestock. Janning discloses microprocessor 281 checks for a low battery condition and causes LED 308 to blink if battery 138 is determined to be low. This is accomplished simply by reading input port RB4 at pin 10 of microprocessor 281 and generating an intermittent output signal at output port RA2 in the event the status of port RB4 indicates that low voltage detector 307 detects a voltage of less than 2.35 volts at power supply rail 283, See Janning ¶ 137.

MacLellan discusses the individual-frequency-utilization-ratio setting portion

being operable to set, of a first distribution pattern in which the individual frequency utilization ratio is relatively high in the relatively low frequency channels and a second distribution pattern Pt in which the individual frequency utilization ratio is relatively high in the relatively high frequency channels, the first distribution pattern.

Applicant is basically claiming that individual frequency utilization ratio is relatively high in the low and high frequency channels so that a center frequency of the distribution of the frequency utilization is low, See MacLellan fig 8 , that shows frequency distribution ($f_1 + f_2$) can be considers low channel utilization and frequency distribution ($f_1 + f_3$) and frequency distribution ($f_1 + f_4$) can be consider high channel utilization, and f_1 is the Carrier wave, i.e. a carrier frequency. MacLellan is not sending data near center frequency; therefore, a center frequency of the distribution of the frequency utilization is low, Col. 11 l. 15-30.

Carlson is being used to show a notch filter being used to eliminate the noise omega$_1$ and omerga$_2$, and the frequencies between the band is being utilized, a digital notch filter for each center frequency may be implemented as shown in equation (8), filtered feedback signal 78 includes a first attenuated frequency band 94 near frequency omega$_1$, and a second attenuated frequency band 96 near frequency omega$_2$, See fig 4 and 5, col. 10, l 46+.

It would have been obvious to an ordinary skilled artisan at the time of invention to filter out portion of frequencies to remove the noise created by adjacent channels or carrier wave thus improve the quality of the signal. Applicant may also see the reference cited in the conclusion section for better understanding of prior art.

Roger teaches to use particular distribution channels, when a supply voltage of said battery cell detected by the power-source-information detecting portion is lower than a predetermined threshold value, **(See Rodger, col. 11 l. 66 – col. 13 l. 23, where Rodger discusses a use of upper bands of a subscan, higher bands carry less RF energy than the lower bands; therefore, raising the frequency will help the signal reach tags that are farther away and save power consumption).**

Consider claim 31, Rodger discloses the endpoint device according to claim 28, wherein said frequency-utilization-ratio setting portion is operable to raise a center frequency of the distribution of the frequency utilization ratio of the subcarrier signal, when a supply voltage of said battery cell detected by the power-source-information detecting portion is higher than a predetermined threshold value, **(See Rodger, col. 11 l. 66 – col. 13 l. 23, where Rodger discusses a use of upper bands of a subscan, higher bands carry less RF energy than the lower bands; therefore, raising the frequency will help the signal reach tags and save power consumption).**

Consider claim 32, MacLellan discloses the endpoint device according to claim 28, wherein said frequency-utilization-ratio setting portion is operable to select one of a plurality of different frequency-utilization-ratio distribution patterns each of which represents a relationship between said plurality of mutually adjacent frequency channels and said frequency utilization ratio of the subcarrier signal, said endpoint device including a memory storing data table representative of said different frequency-

utilization-ratio distribution patterns, said frequency determining portion being operable to hop the frequency of the subcarrier signal according to the selected one of said different frequency-utilization-ratio distribution pattern, **(See MacLellan, Fig 8, col. 12 l. 5-30, where MacLellan discusses the system is design to frequency channel within the entire frequency range of the subcarrier signals, the tag comprises the memory containing an algorithm for frequency distribution and the frequency hopping of the sub carrier signal using the algorithm).**

Consider claim 33, the combination of Nysen and Rodger discloses, the endpoint device according to claim 28, wherein said frequency-utilization-ratio setting portion is operable to set the distribution of the frequency utilization ratio of the subcarrier signal so that a center frequency of said distribution is lower when said battery cell is a primary battery cell, than when said battery cell is other than said primary battery cell, **(See Nysen, col. 12 l. 45-54 and col. 13 l. 38-40, where Nysen discusses the transponder may and active such as a tag with an internal battery or a passive transponder a tag without internal battery and it is known to use lower frequency band with passive transponder because they totally depend on RF energy of a signal).**

Consider claim 35, Nysen discloses the endpoint device according to claim 28, wherein said frequency-utilization-ratio setting portion is operable to set the distribution of the frequency utilization ratio of the subcarrier signal, by changing at least an amount

of data transmitted with said reflected signal and a time period during which said reflected signal is transmitted, each time the reflected signal having a selected one of said mutually adjacent frequency channels is transmitted, **(See Nysen, col. 11 l. 5 –col. 12 l. 64, where Nysen discusses the system is design to set or shift the subcarrier frequency by changing the length of transmission of the backscatter signal i.e. changing the period of the duty cycle by changing the frequency, every time the backscatter signal transmitted one of the adjacent frequency channels).**

Consider claims 40 and 41, MacLellan discloses the communication system according to claim 36, wherein said switching-information generating portion is operable to generate the switching information for raising a center frequency of the distribution of said individual frequency utilization ratio of the subcarrier signal of said each endpoint device, when said overall-frequency-utilization ratio determining portion determines that said overall frequency utilization ratio of said reflected signals in low frequency channels of said predetermined range of frequency of the subcarrier signal is higher than a predetermined threshold value, **(See MacLellan, col. 11 l. 5- col. 12 l. 63, where MacLellan, discusses the processor to adjust the center frequency of the subcarrier signal according to the channels that are receiving the backscatter signals of a high and low frequency subcarrier signal).**

Consider claim 42, Nysen discloses the endpoint device according to claim 39, wherein said plurality of endpoint devices include at least one first endpoint device

wherein a primary battery cell is provided as said battery cell, and at least one second endpoint device wherein a secondary battery cell is provided as said battery cell, [the secondary battery is provided in addition to a primary battery cell in the second endpoint device?], said switching-information generating portion being operable to generate the switching information that causes said individual-frequency-utilization-ratio setting portion of each of said at least one first endpoint device to set the distribution of said individual frequency utilization ratio of the subcarrier signal so that a center frequency of the distribution of said individual frequency utilization ratio of the subcarrier signal of said each first endpoint device is lower that that of said each second endpoint device, **(See reference , col. 13 l. 37- col. 14 l. 63, and col. 35 l. 40 - col. 36 l. 25,where Nysen discusses the some tags may include more than power source, i.e. battery cell, and the processor identifies the tags and set the channel of the carrier signal lower for a single cell tags in order to deliver more RF energy than tags with a secondary power source).**

Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nysen: US 6107910 A by Nysen, and further in view of Rodger: Rodger in US 6362737 and further in view of MacLellan: US 5940006 by MacLellan, in view of Janning in US 20010040508, and further in view of Takatori: US 20010020897 by Takatori, Sunao et al.

Consider claim 34, Takatori discloses the endpoint device according to claim 28,

further comprising a solar cell as a power source device, **(See Takatori, abstract and PP 26).**

Consider claim 34, Nysen does not specifically discloses the endpoint device comprising a solar cell as a power source device; nevertheless, it would be obvious to one of ordinary skill in the art at the time of invention to modify the invention of Nysen and design the tag with a solar cell as a power source as taught by Takatori to design a system in an effort to reduce the cost of power consumption by the tag, **(See Takatori PP 13-14).**

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Perahia, Elda et al. (US 6088416); discusses the frequency reuse pattern distributes communications beams covering the same bandwidth over a wider physical area, thereby reducing co-channel interference. Adjacent beams that cover overlapping bandwidths are orthogonal and therefore minimize adjacent channel interference.

Shattil, Steve (US 6008760); discusses techniques for reducing co -channel interference include frequency-separation.

Meyer, John D. et al. (US 5821470); discusses a circuit having a high frequency channel connected to the first transducer means and a low frequency channel connected to the second transducer means. The high frequency channel includes high-

pass filter means, and a center frequency located above the operating range of the second transducer means.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Omer S. Khan whose telephone number is (571)270-5146. The examiner can normally be reached on M-F 7:30 - 5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian A. Zimmerman can be reached on 571-272-3059. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Omer S Khan/
Examiner, Art Unit 2612

/Brian A Zimmerman/
Supervisory Patent Examiner, Art Unit 2612